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BUTTERFLIES AND THEIR TRANSFORMATIONS.

Nor long since, few things in the natural history of animals were regarded as more interesting and surprising than the series of changes which insects undergo in their progress from the egg to their perfect state. This metamorphosis, as it is called, was until very lately supposed peculiar to the class of insects; and although the researches of modern naturalists have shown that changes perhaps still more remarkable occur in the lives of many of the lower forms of marine animals, the study of the metamorphoses of insects must always present much to excite the curiosity and engage the attention of the student of nature.

In few insects is this series of changes to be observed in greater perfection than in the beautiful tribe of creatures of which we propose to give some account in the present paper. In none can there be a greater difference between the first and last states—the former, a soft, crawling caterpillar, devouring the coarsest vegetable food with an insatiable appetite—the latter, a delicate, airy being, fluttering in the sunshine from flower to flower, and drawing its sole nourishment from the honied juices laid up in those natural receptacles. Nor can we find an instance in which the intermediate or pupa state is more distinctly marked—in which the appearance of death is more completely simulated, than in these creatures—whence the butterfly has in all ages been regarded as a sort of emblem of the resurrection.

Of all our British butterflies, there is perhaps none more beautiful than the Swallow-tail butterfly (*Papilio Machaon*), represented in all its stages, in the accompanying woodcut (fig. 1.). This handsome insect, the only British representation of a group of which many magnificent species inhabit the sunny regions of the tropics, is met with not uncommonly in the fenny districts of this country. The caterpillar, which feeds principally upon the fennel and wild carrot, is of considerable size when fully grown; it is of a beautiful green colour, with numerous black rings looking like bands of black velvet, alternately plain and spotted with red. The body, as in all caterpillars, consists of twelve segments besides the head, and the creature crawls upon sixteen feet—three pairs of short, jointed legs, which are afterwards converted into the long slender legs of the butterfly, being attached to the three segments immediately following the head, and five pairs of soft membranous feet, which disappear in the perfect insect, supporting the hinder part of the body. This caterpillar presents a singular character, which serves to distinguish it at once from all other English species, although it is common to all the foreign insects immediately allied to the swallow-tail butterfly; it is furnished with a pair of little filaments, capable of being protruded and retracted at pleasure from a tubercle situated immediately behind the head; these form a Y- or V-shaped organ of a red colour, which secretes a fluid of a disagreeable odour, and it is supposed that the caterpillar employs them to frighten away any insect enemies, such as ichneumons, which may chance to disturb its equanimity by their unwelcome intrusion.

When the caterpillar is full-grown it prepares to change into its second, pupa or chrysalis, state. For this purpose it seeks some suitable spot, where, during the period of deathlike lethargy through which it is now to pass, it may be protected as much as possible from the weather and the assaults of its enemies. Its choice made, it spins a small web of silk, in which it entangles the hooks of its hindmost pair of feet, which are situated quite at the extremity of the body. Many caterpillars are content with attaching themselves by one end in this manner before undergoing this important change; but the chrysalis of the swallow-tail butterfly appears to entertain some objection to swinging freely at the mercy of the wind, and the caterpillar accordingly, directed by unerring instinct, proceeds to form a loop of silk round its middle, by which, when changed into a helpless pupa, it will be kept snugly moored to its resting-place. This effected, it bursts and throws off its skin by various movements of the body,

and appears in a form apparently as different from that which it is eventually to assume as from that which it has just quitted. Nevertheless, in the horny case which now encloses all the parts of the future butterfly, the positions of many of its organs are already to be recognised; we see the elevations of the surface of the chrysalis, which are afterwards to be occupied by the wings, the antennæ, and the legs; and as the creature approaches maturity, something even of the colours may be discerned through the integuments. The chrysalis of this insect is of a greenish colour, with a black band on each side. At the end of the appointed time the butterfly emerges from its case; at first soft and weak, with folded and imperfect wings, which, however, soon expand; and at length the creature springs into the air, to sport for a while with its fellows in the bright sunbeams, to leave behind it the germs of a future generation; and having fulfilled all the ends for which it was called into being, to die, after a short but apparently happy existence, and leave its place to be occupied by others. In beauty of colour and elegance of marking, the swallow-tail yields to none of our British butterflies. Its principal colours are a beautiful sulphur-yellow and a deep velvet black, the latter, however, being frequently powdered in the upper wings with single yellow scales, in the lower with similar scales of a pearly blue colour. The lower wings are also furnished with a black tail and marked with a beautiful red eye-like spot on the inner apical angle. Our figure of the English swallow-tail represents the butterfly soon after its emergence from the chrysalis and before the wings have attained their full development; but the form of the tail and the position of the eye-like spot in the hinder wings are well shown in the accompanying figure of a very nearly allied butterfly, the *Papilio Podalirius* (fig. 2.), a native of the southern countries of Europe, and long reputed a British insect.

Another very handsome insect, allied to the preceding, is the Apollo butterfly (*Parnassius Apollo*, fig. 3.), which may be found by some of our summer tourists in the Alpine districts of the continent. The ground colour of this charming insect is white; the fore-wings have each three or four black spots, whilst the hinder wings are adorned above with two, beneath with three, red eye-like spots, generally surrounded by a black ring, and furnished with a small white pupil. It is found in all the mountainous parts of Europe, and even in Siberia; but although it has been said to be an inhabitant of the highlands of Scotland, its occurrence in Britain is more than doubtful. The caterpillar of the Apollo butterfly also possesses the singular forked organ at the back of the neck, but this is wanting in all the following species.

A very pretty little butterfly, which is found in many parts of England, and is generally distributed on the continent, is the Marbled-white butterfly (*Argo Galathea*, fig. 4.). It is met with in meadows in the neighbourhood of woods, where the caterpillar feeds upon the common cat's-tail grass. Contrary to the usual practice of its relations, the chrysalis of this butterfly does not attach itself to any object, but lies upon the bare ground. The butterfly is yellowish white, spotted with black.

Several species of the genus *Hesperia* are found in this country, where they are known to collectors by the name of "Skippers," from the curious jerking motions of the animal during flight. They inhabit woods and gardens, and although their stout bodies and strong wings indicate considerable power of flight, they rarely fly to any distance, but take their rapid, jerking course from one resting-place to another. The species represented in fig. 5 is generally distributed on the continent, but is not met with in this country. Like most of its allies, its appearance is very plain; the general colour being brown; but the lower surface of the hinder wings is greyish, with about a dozen large white spots, each surrounded by a black border.

Of these butterflies the caterpillars are naked; but a great number are clothed with hairs or spines, which in some cases

serve as formidable weapons of defence. In the genus *Vanessa*, to which the well-known and beautiful Tortoise-shell and Peacock butterflies belong, the caterpillars are covered with spines, which are frequently curiously toothed. One species of this

localities. The cause of this singular phenomenon is still unexplained; but it is remarkable that several other species of the genus *Vanessa* are in the habit of appearing occasionally in vast numbers in particular localities, giving rise, from their depo-

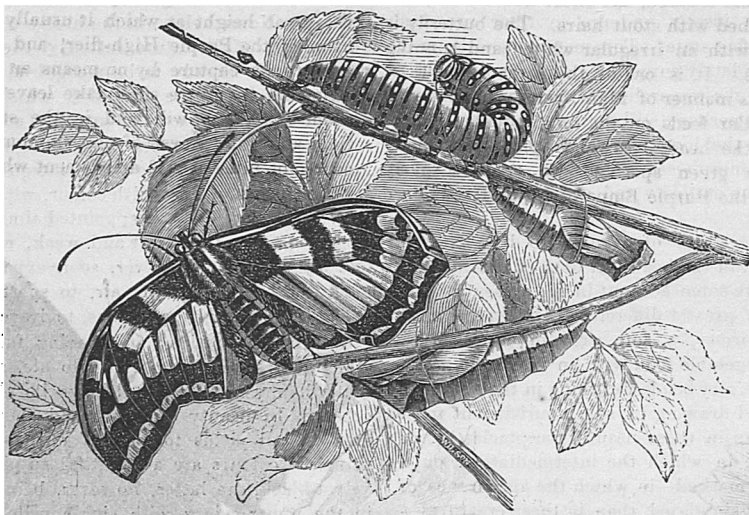


FIG. 1.—THE SWALLOW-TAIL BUTTERFLY (*PAPILIO MACHAON*).

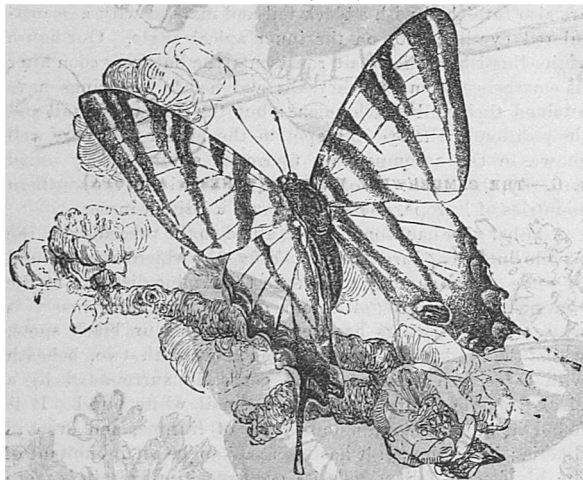


FIG. 2.—*PAPILIO PODALIRIUS*.

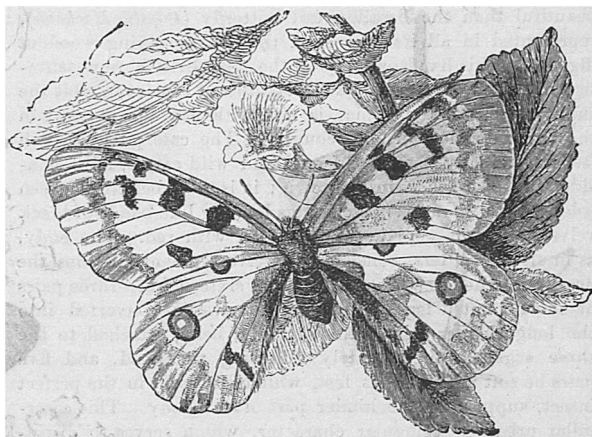


FIG. 3.—THE APOLLO BUTTERFLY (*PARNASSIUS APOLLO*).

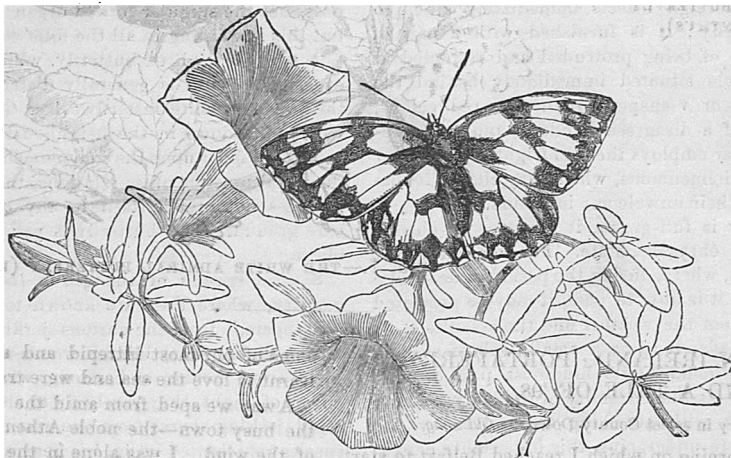


FIG. 4.—THE MARBLED WHITE BUTTERFLY (*ARGE GALATHEA*).

genus, the *Vanessa Antiopa*, or Camberwell Beauty (fig. 6.), is remarkable from its appearing in certain seasons in profusion in almost all parts of the country, and afterwards occurring sometimes for many years only in individual specimens in different

siting a red liquid on various objects before rising into the air, to the numerous accounts of bloody rain which are to be met with in old writers. The Camberwell Beauty is a very handsome insect; the wings are of a deep rich chocolate brown

colour, surrounded by a white or pale yellowish border; within this the wings are black, with a row of bluish spots.

The caterpillar of the White Admiral butterfly (*Limenitis Sibylla*, fig. 7.) is also armed on the back with spines; but these, instead of being long and toothed, are short and forked, and the animal is also clothed with stout hairs. The butterfly is of a blackish colour, with an irregular white band running through all the wings. It is one of the most graceful of British butterflies in its manner of flight, but is by no means common. The caterpillar feeds on the honeysuckle; it is of a green colour, with the head, legs, and spines of a rusty red; the chrysalis is green spotted with gold. Nearly allied to this species is the Purple Emperor butterfly (*Apatura*

Iris), one of the most beautiful of the British species. The wings are black, with bands and spots of white arranged somewhat as in the white admiral; but the black surface in certain lights reflects a most brilliant mazarine blue or purple colour, which adds greatly to the beauty of the insect. From the great height at which it usually flies it has obtained the name of the Purple High-flier, and its great power of wing renders its capture by no means an easy matter. With this charming insect we shall take leave of our readers, assuring them that they will find in the study of the transformations and habits, even of our commonest English butterflies, a source of interest and amusement which perhaps they would little suspect.

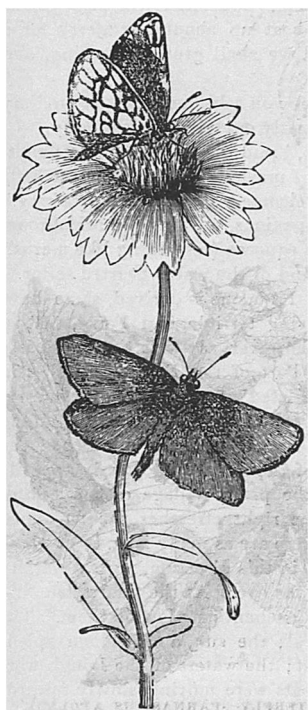


FIG. 5.—THE MIRROR BUTTERFLY (*HESPERIA ARANTHUS*).

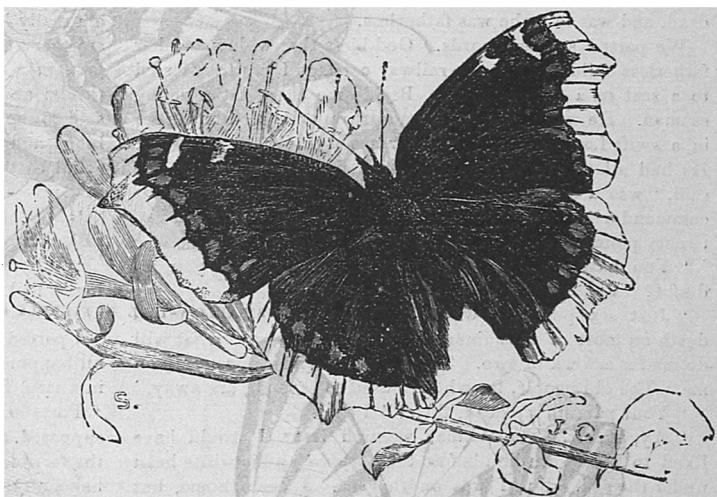


FIG. 6.—THE CAMBERWELL BEAUTY (*VANESSA ANTIOPA*).

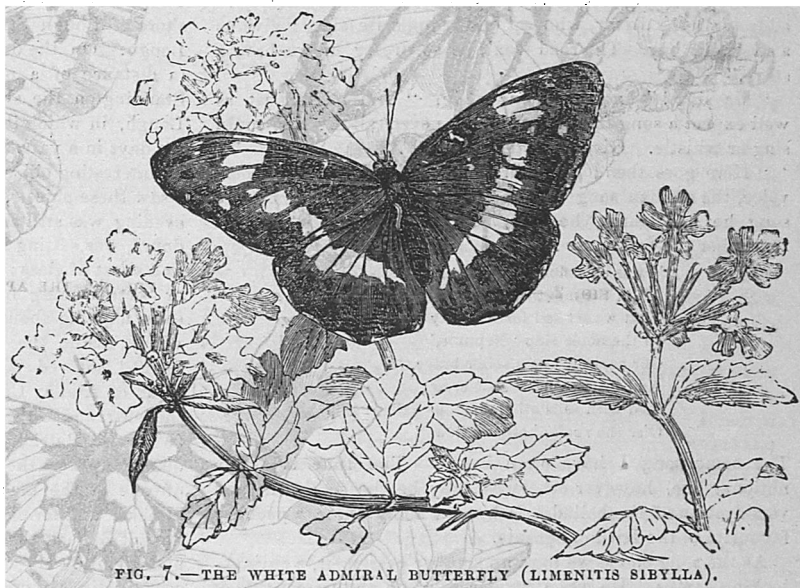


FIG. 7.—THE WHITE ADMIRAL BUTTERFLY (*LIMENITIS SIBYLLA*).

RAMBLES IN IRELAND: PORTAFERRY, AND A TALE OF '98.

"Old Portaferry in sweet County Down."—*Old Song*.

It was a splendid morning on which I reached Belfast to start by rail for Portaferry. Often had I heard of that lovely place, but, somehow or other, never had I before wended my way thither. Honest, light-hearted, brave seamen had I met frequently in various places, and coming from all parts of the world, who spoke fondly of Portaferry as their home. I longed to see it, to view its romantic scenery, to wander along its shore, and sail over its waters, on which, as is well known,

some of our most intrepid and skilful mariners in childhood learnt to love the sea and were trained to brave its dangers.

Away we sped from amid the bustle and din and smoke of the busy town—the noble Athens of Ulster—as on the wings of the wind. I was alone in the carriage for a time, but just before starting two others entered—a mother and her child. She was a widow, young and in sad mourner's garb. How early had Death entered her home, and buried her affections in the grave of him she loved! Her little girl was about four years of age. She was a lovely child, fair as a lily, with bright blue eyes, and flaxen hair waving in golden curls about her face. Afterwards I heard their history. They were